

REMARKS

Claims 1-32 were pending in the Application. Claim 32 is withdrawn from consideration. Applicant cancelled claims 2 and 13 without prejudice or disclaimer. Claims 33-35 are added. Hence, claims 1, 3-12 and 14-35 are pending.

Claims 1-7, 10-15, 17-22, and 24-31 are rejected under 35 U.S.C. § 103(a). Further, claims 1, 6-11, 14 and 20-23 are provisionally rejected under non-statutory obviousness-type double patenting. Claim 16 is indicated as containing allowable subject matter. Applicant addresses these rejections below.

I. REJECTIONS UNDER 35 U.S.C. §103(a):

The Examiner asserts that independent claim 1 and dependent claims 3-5, 10, 11, 14 and 25 are unpatentable over Gitzhofer et al. (U.S. Patent No. 5,609,921) (hereinafter "Gitzhofer") in view of Heinecke et al. (U.S. Patent No. 4,824,690) (hereinafter "Heinecke"). The Examiner accepts that Gitzhofer does not disclose that the plasma is pulsed. However, the Examiner asserts that it would have been obvious to one of ordinary skill to use the method of Gitzhofer in combination with a pulsed plasma, as suggested by Heinecke, in order to deposit coatings onto a heat sensitive substrate. Applicant respectfully disagrees with the Examiner.

Firstly, Gitzhofer teaches a method where the exciting medium is used to physically melt solid particles from a slurry onto a substrate to provide a coating. Heinecke discloses in column 2, lines 42-44, that the pulsing of the plasma is used to increase dissociation of the precursor. Indeed, column 1, line 28-32 states it is a problem to deposit inorganic coatings at relatively low temperatures, therefore high temperatures are typically used to promote a high degree of precursor dissociation. However, this is unsuitable for heat sensitive substrates. It is therefore clear that Heinecke uses a plasma to dissociate the coating forming material whilst using the pulsing to protect the substrate. This in fact teaches away from the current invention as in the current invention the plasma is used to chemically activate the coating forming material, and the pulsing of the plasma is used to protect and keep the coating forming material relatively intact, i.e., by avoiding dissociation, to form a coating on the substrate. As the plasma is used for

different purposes in both Gitzhofer and Heinecke, the skilled person would not consider it obvious to combine the same, as the combination of both does not lead or teach the current invention inasmuch as in a combination of the prior art documents the heat sensitive substrate is in the plasma and therefore would not be protected.

In connection with the Examiner's rejection of claims 1-4, 10, 12, 13, 15, 17-21, 24 and 26-31 as being unpatentable over Goodwin et al. (U.S. Patent Application Publication No. 2004/0022945) (hereinafter "Goodwin") in view of Badyal et al. (U.S. Patent No. 6,551,950) (hereinafter "Badyal"), the Examiner also accepts that Goodwin does not disclose that the plasma discharge is pulsed. However, the Examiner believes it would have been obvious to use the method of Goodwin in combination with the pulse plasma discharge of Badyal to lead to the current invention. Applicant respectfully disagrees with the Examiner that this is the case.

The primary reason is because the method disclosed in Goodwin is an atmospheric pressure discharge for forming a coating. As stated in Goodwin paragraph 0003, there are plasma discharge methods for coating a substrate, however such plasma treatments require reduced pressure. Thus, Goodwin is concerned with coating a substrate at atmospheric pressure. Atmospheric pressure discharges are known to be high energy, and, even if conducted in a vacuum and pulsed as disclosed in paragraph 0002, the structural retention is not suitable for Goodwin. Indeed, in paragraph 0019, it discloses that the chemical (structural) properties are retained in the Goodwin method. Therefore, the person of ordinary skill would not look to the vacuum method of Badyal from Goodwin to obtain a greater level of structural retention.

Further to this rejection, the Examiner states that the precursor species must be monomeric ions, however, this is clearly incorrect as the precursor can also include oligomers (page 4, paragraph 7 of the application as filed).

With regard to the rejections of claims 6, 7 and 22 as being unpatentable over Gitzhofer and Heinecke in view of Wang (U.S. Patent No. 5,260,105), we submit that it would not be obvious to combine Gitzhofer and Heinecke for the reasons stated above. Further to this, it would not be obvious to combine Gitzhofer and Heinecke with Wang,

and such a combination does not lead to the present invention. Firstly, because Gitzhofer and Wang employ a carrier medium which is completely absent in the current application, and secondly, Gitzhofer, Heinecke and Wang do not disclose the use of pulsed plasma for improved structural retention of the atomised coating forming material.

In response to arguments and questions posed in paragraph 9 of the present Office Action, we submit that Heinecke discloses complete opposite reasoning for pulsing the plasma, i.e., increased dissociation of the precursor. The present invention discloses the minimisation of dissociation of the precursor in order to gain improved structural retention of the same.

With regard to the Examiner's comments in paragraph 10 of the present Office Action, whilst there are a large number of physiochemical transformations, and, indeed it could be argued there would have to be some form of physiochemical transformation induced by the plasma otherwise its presence would be superfluous, neither Gitzhofer nor Heinecke disclose the production of precursor species which are monomeric and/or oligomeric radicals and/or ions.

Applicant notes that the Examiner withdraws the rejection with regard to independent claim 27 due to the previous limitation and arguments. Applicant submits that the same arguments must also therefore be accepted in respect of claim 1.

With regard to paragraph 12 of the present Office Action, Applicant submits that any combination of Gitzhofer and Wang does not teach significant retention of the atomised coating forming material. In addition Gitzhofer and Wang employ a carrier medium, which as stated above, is not present in the current application.

In light of the above information, claim 1 has been amended to reflect the differences between the prior art and the current invention. Therefore, Applicant believes the Examiner will be minded to change their opinion on the patentability of independent claim 1.

II. PROVISIONAL REJECTION UNDER OBVIOUSNESS-TYPE DOUBLE PATENTING:

The Examiner has provisionally rejected claim 1 under the judicially created doctrine of obviousness-type double patenting in view of claim 14 of copending Application No. 10/514,661. Further, the Examiner has provisionally rejected claims 6-11, 14 and 20-23 under the judicially created doctrine of obviousness-type double patenting in view of claims 1, 5-8, 11 and 15-21 of copending Application No. 10/514,661.

Since none of these Applications at issue have been allowed, Applicant defers responding to this rejection.

Applicant notes that if the "provisional" double patenting rejection is the only rejection remaining in an application (either the present application or in Application No. 10/514,661), then the Examiner should withdraw the rejection and permit that application to issue as a patent. M.P.E.P. §804. The "provisional" double patenting rejection may then be converted into a double patenting rejection in the other application at the time the one application issues as a patent. M.P.E.P. §804.

III. CONCLUSION:

As a result of the foregoing, it is asserted by Applicant that claims 1, 3-12 and 14-35 in the Application are in condition for allowance, and respectfully requests an allowance of such claims. Applicant respectfully requests that the Examiner call Applicant's attorney at the below listed number if the Examiner believes that such a discussion would be helpful in resolving any remaining issues.

Respectfully submitted,

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